

DETAILED ACTION

Response to Amendment

1. This office action is in reply to Applicant's response dated June 17, 2011.
2. **Claims 1, 3, 5, 6, 8, 16 and 27** have been amended.
3. **Claims 7 and 9** have been cancelled.
4. **Claims 1, 3, 5, 6, 8, 16 and 27** are allowed.

Examiner's Amendment

5. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Daniel Barry (Reg. No. 65,423) on July 11, 2011.

Amend **Claims 1 and 16** as follows.

1. (Currently Amended) An encoding hardware apparatus for encoding images of frames which form a moving image by motion compensation, comprising:
input means for inputting images of frames;
section division means for dividing the frames into a plurality of sections on the basis of the images of the frames input by the input means;

representative image setting means for setting, as a representative image, an image of a self frame, which has a smallest sum total value of differences from a group of images of other frames in each of the sections divided by the section division means; and

reference image selection means for selecting one representative image to be referred to so as to encode an image of a frame of interest from the representative images set for respective sections, and

wherein the image of the frame of interest is encoded by motion compensation using the images of the frames in the section that includes the representative image selected by the reference image selection means;

wherein the section division means comprises:

determination means for determining whether or not a frame of interest is included in a section to which a frame immediately before the frame of interest belongs;

first setting means for, when the frame of interest is included in the section to which the frame immediately before the frame of interest belongs, setting the representative frame set in the section or the frame of interest as a new representative image in the section on the basis of images of respective frames in the section and an image of the frame of interest; and

second setting means for, when the frame of interest is not included in the section to which the frame immediately before the frame of interest belongs, setting a new section which is different from the section and includes the frame of interest;

wherein the first setting means comprises:

first calculation means for calculating differences between respective frames in the section and the frame of interest, and calculating a sum total value of the calculated differences;

second calculation means for calculating a difference between the representative frame set in the section and the image of the frame of interest;

representative frame setting means for, when a sum of the value calculated by the second calculation means and a threshold is not less than the sum total value calculated by the first calculation means, setting the frame of interest as a new representative frame in the section;

first threshold setting means for, when the sum value is not less than the sum total value calculated by the first calculation means, setting the sum total value calculated by the first calculation means as the threshold; and

second threshold means for, when the sum value is not more than the sum total value calculated by the first calculation means, setting the sum value as the threshold.

16. (Currently Amended) An encoding method of encoding images of frames which form a moving image by motion compensation, using an encoding hardware apparatus, the encoding method comprising:

an input step of inputting images of frames;

a section division step of dividing the frames into a plurality of sections on the basis of the images of the frames input in the input step;

a representative image setting step of setting, as a representative image, an image of a self frame, which has a smallest sum total value of differences from a group of images of other frames in each of the sections divided in the section division step; and

a reference image selection step of selecting one representative image to be referred to so as to encode an image of a frame of interest from the representative images set for respective sections, and

wherein the image of the frame of interest is encoded by motion compensation using the images of the frames in the section that includes the representative image selected in the reference image selection step;

wherein the section division step includes:

a determining step of determining whether or not a frame of interest is included in a section to which a frame immediately before the frame of interest belongs;

a first setting step of, when the frame of interest is included in the section to which the frame immediately before the frame of interest belongs, setting the representative frame set in the section or the frame of interest as a new representative image in the section on the basis of images of respective frames in the section and an image of the frame of interest; and

a second setting step of, when the frame of interest is not included in the section to which the frame immediately before the frame of interest belongs, setting a new section which is different from the section and includes the frame of interest;

wherein the first setting step further comprises:

a calculation step of calculating differences between respective frames in the section and the frame of interest, calculating a sum total value of the calculated differences, and calculating a second difference between the representative frame set in the section and the image of the frame of interest;

a representative frame setting step of, when a sum of the value calculated by the second difference and a threshold is not less than the sum total value, setting the frame of interest as a new representative frame in the section:

a first threshold setting step of, when the sum value is not less than the sum total value, setting the sum total value as the threshold; and

a second threshold step of, when the sum value is not more than the sum total value, setting the sum value as the threshold.

Allowable Subject Matter

6. The following is an examiner's statement of reasons for allowance.

Independent **claim 1** recites "...wherein the section division means comprises: determination means for determining whether or not a frame of interest is included in a section to which a frame immediately before the frame of interest belongs; first setting means for, when the frame of interest is included in the section to which the frame immediately before the frame of interest belongs, setting the representative frame set in the section or the frame of interest as a new representative image in the section on the basis of images of respective frames in the section and an image of the frame of interest; and second setting means for, when the frame of interest is not included in the

section to which the frame immediately before the frame of interest belongs, setting a new section which is different from the section and includes the frame of interest; wherein the first setting means comprises: first calculation means for calculating differences between respective frames in the section and the frame of interest, and calculating a sum total value of the calculated differences; second calculation means for calculating a difference between the representative frame set in the section and the image of the frame of interest; representative frame setting means for, when a sum of the value calculated by the second calculation means and a threshold is not less than the sum total value calculated by the first calculation means, setting the frame of interest as a new representative frame in the section; first threshold setting means for, when the sum value is not less than the sum total value calculated by the first calculation means, setting the sum total value calculated by the first calculation means as the threshold; and second threshold means for, when the sum value is not more than the sum total value calculated by the first calculation means, setting the sum value as the threshold..." which are features that are not anticipated nor obvious over the art of record. Independent **claim 16** is a method claim corresponding to the apparatus claim 1 and therefore claim 16 is allowable too. All the remaining claims are dependent on either of claim 1 or claim 16. Therefore, all the pending claims are allowed. Claim 16 is also statutory since motion compensation is performed by hardware.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on

Statement of Reasons for Allowance."

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HEE-YONG KIM whose telephone number is (571)270-3669. The examiner can normally be reached on Monday-Thursday, 8:00am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Kelley can be reached on 571-272-7331. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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